

Claims:

Sub A19 1. A composition exhibiting vWF protease activity comprising at least one single peptide chain having a molecular weight between 190 kD and 100 kD as determined by SDS-PAGE and comprising the amino acid sequence AAGGILHLELLV.

2. A composition according to claim 1 wherein said sequence is located at the N-terminus of the peptide chain.

3. A composition according to claim 1 wherein said peptide chain has a molecular weight of about 180 kD.

4. A composition according to claim 1 wherein said peptide chain has a molecular weight of about 170 kD.

5. A composition according to claim 1 wherein said peptide chain has a molecular weight of about 160 kD.

6. A composition according to claim 1 wherein said peptide chain has a molecular weight of about 120 kD.

7. A composition according to claim 1 wherein said peptide chain has a molecular weight of about 110 kD.

8. A composition according to claim 1 wherein said composition cleaves vWF at the peptide bond 842Tyr-843Met.

9. A composition according to claim 1 wherein said composition retains activity in the presence of a serine protease inhibitor and a calpain protease inhibitor.

10. A composition according to claim 9, wherein said serine protease inhibitor is diisopropyl fluorophosphate.

11. A composition according to claim 9, wherein said calpain protease inhibitor is Z-Leu-Leu-Tyr-CHN₂.

Sub A 13
12. A composition according to claim 1 wherein said peptide chain further comprises the amino acid sequence AVGPDVFQAHQEDTERYV
LTNLNIGAELLRDPSLGAQFRVHLVKMVLTEPEGAPNITANLTSSLLSVCGWSQTINPEDD
TDPGHADLVLYTRFDLELPDGNRQVRGVTQLGGACSPWCLITEDTGFDLGVTI
following the sequence AAGGILHLELLV.

13. A composition according to claim 1, further comprising Ca²⁺, Sr²⁺ or Ba²⁺ ions.

14. A composition according to claim 1 comprising Ca²⁺ ions in a concentration of about 1 to 10⁶ per selected polypeptide molecule.

15. A composition according to claim 1, wherein said composition is essentially free of vWF or vWF fragments.

16. A composition according to claim 1, further comprising clusterin or an analog or derivative thereof.

Sub A 14
17. An isolated polypeptide having a molecular weight between 180 kD and 100 kD as determined by SDS-PAGE and comprising the amino acid sequence AAGGILHLELLV.

Sub A10 18. An isolated polypeptide according to claim 14, wherein said polypeptide further comprises the amino acid sequence
 AVGPDVFQAHQEDTERYVLTNLNIGAELLRDPSLGAQFRVHLVKMVILTEPEGAPNITANL
 TSSLLSVCGWSQTINPEDDTPGHADLVLYITRFDLELPDGNRQVRGVTQLGGACSPWTS
 CLITEDTGFDLGVTI directly following the amino acid sequence AAGGILHLELLV.

19. An isolated polypeptide according to claim 18 having a molecular weight of about 170 kD.

20. An isolated polypeptide according to claim 18 having a molecular weight of about 160 kD.

21. An isolated polypeptide according to claim 18 having a molecular weight of about 120 kD.

22. An isolated polypeptide according to claim 18 having a molecular weight of about 110 kD.

23. A vWF cleaving complex comprising a polypeptide according to claim 18 and a divalent metal ion selected from the group consisting of Ca^{++} , Sr^{++} and Ba^{++} .

24. A vWF cleaving complex according to claim 23 wherein the divalent cation is Ca^{++} .

25. A vWF cleaving complex comprising a complex according to claim 23, further containing vWF.

Sub A17 26. A composition comprising a polypeptide which comprises the sequence
 AAGGILHLELLV.

27. Use of a composition according to claim 14 for the development of anti-peptide antibodies or derivatives thereof.

Sub A18 28. A method of purifying von Willebrand factor comprising contacting a solution containing von Willebrand factor with a polypeptide substrate comprising the amino acid sequence AAGGILHLELLV under conditions sufficient to bind von Willebrand factor to the substrate.

29. A composition according to claim 18, wherein the amino acid sequence is encoded by the polynucleotide according to Fig. 2.

Sub A18 30. An isolated polypeptide having vWF protease activity wherein said polypeptide comprises the amino acid sequence
AAGGILHLELLVAVGPDVFQAHQEDTERYVLTNLTNIGAELLRDP
SLGAQFRVHLVKMVLTE
PEGAPNITANLTSSLLSVCGWSQTINPEDDTPGHADLVLYITRFDLELPDGNRQVRGV
TQ
LGGACSP
TWSCLITEDTGFDLGV
TI.

31. An isolated polypeptide according to claim 30 wherein said polypeptide is encoded by a polynucleotide sequence according to Fig. 2.

32. A host cell and progeny thereof containing a polynucleotide according to Fig. 2.

33. A method for the production of a polypeptide exhibiting vWF protease activity comprising

- growing, in a nutrient medium, a host cell comprising an expression vector comprising, in the direction of transcription, a transcriptional regulatory region and a translational initiation region functional in a host cell,
- a cDNA sequence encoding for a polypeptide according to claim 18, wherein said cDNA comprises the sequence according to Fig. 2 and
- transcriptional and translational termination regions functional in said host cell,

35. Use according to claim 35, wherein the disease can be selected from the group consisting of thrombotic thrombocytic purpura (TTP), Henoch-Schönlein purpura, preeclampsia, neonatal thrombocytopenia or hemolyticuremic syndrome.